WHAT IS CLAIMED IS:

1. A process of aligning and connecting at least one optical fiber to at least one optoelectronic device to facilitate the coupling of light between at least one optical fiber and at least one optoelectronic device, comprising the steps of:

   a) positioning at least one optical element in a position relative to at least one optoelectronic device in such a manner that when the device and element are in a position proximate to each other, they would be in optical alignment;

   b) depositing a first non-opaque material on the first end of at least one optoelectronic device; and

   c) fixating the first end of at least one optical element proximate to the first end of at least one optoelectronic device in such a manner that the first non-opaque material contacts the first end of at least one optoelectronic device and the first end of at least one optical element.

2. A process according to claim 1, wherein the at least one optoelectronic device is included in an array of optoelectronic devices.

3. A process as in claim 1, wherein at least one optoelectronic device is a vertical cavity surface emitting laser.

4. A process as in claim 3, wherein the vertical cavity surface emitting laser is an oxide vertical cavity surface emitting laser.

5. A process as in claim 1, wherein at least one optoelectronic device is a photo-detector.

6. A process according to claim 1, wherein the first non-opaque material comprises an adhesive.

7. A process according to claim 6, wherein the first non-opaque material comprises an UV optical adhesive.

8. A process according to claim 1, wherein the first non-opaque material functions to provide an optical path.

9. A process according to claim 1, wherein the first non-opaque material functions to provide mechanical stability

10. A process according to claim 1, wherein the first non-opaque material comprises a gel.

11. A process according to claim 1, wherein the at least one optical element is included in an array of optical elements.

12. A process according to claim 1, wherein at least one optical element is an optical fiber.

13. A process according to claim 1, wherein at least one optical element is a MT-type connector.

14. A process according to claim 1, wherein at least one optical element is a ferrule.

15. A process according to claim 14, wherein at least one optical element is a MT-like ferrule

16. A process according to claim 1, wherein at least one optical element is a lenslet array.

17. A process according to claim 1, wherein at least one optical element is a diffractive optical element.

18. A process of aligning and connecting at least one optical fiber to at least one optoelectronic device to facilitate the coupling of light between at least one optical fiber and at least one optoelectronic device, comprising the steps of:

a) positioning at least one optical element in a position relative to at least one optoelectronic device in such a manner that when the device and element are in a position proximate to each other, they would be in optical alignment;

b) bringing a first end of at least one optical element proximate to a first end of at least one optoelectronic device; and

c) filling in the area surrounding at least one optical element with a solidifying material.

19. A process according to claim 18, wherein the solidifying material functions to mechanically stabilize at least one optical element to a mounting surface

20. A process according to claim 18, wherein the solidifying material functions to provide moisture and electrical shielding.

21. A process according to claim 18, further comprising the step of forming a dam surrounding at least one optoelectronic device.

22. A process according to claim 18, wherein the at least one optical element is included in an array of optical elements.

23. A process according to claim 18, wherein at least one optical element is an optical fiber.

24. A process according to claim 18, wherein at least one optical element is a MT-type connector.

25. A process according to claim 18, wherein at least one optical element is a ferrule.

26. A process according to claim 25, wherein at least one optical element is a MT-like ferrule

27. A process according to claim 18, wherein at least one optical element is a lenslet array.

28. A process according to claim 18, wherein at least one optical element is a diffractive optical element.

29. A process as in claim 18, wherein at least one optoelectronic device is a vertical cavity surface emitting laser.

30. A process as in claim 29, wherein the vertical cavity surface emitting laser is an oxide vertical cavity surface emitting laser.

31. A process as in claim 18, wherein at least one optoelectronic device is a photo-detector.

32. A process of aligning and connecting at least one optical fiber to at least one optoelectronic device to facilitate the coupling of light between at least one optical fiber and at least one optoelectronic device, comprising the steps of:

a) positioning at least one optical element in a position relative to at least one optoelectronic device in such a manner that when the device and element are in a position proximate to each other, they would be in optical alignment;

b) fixating the first end of at least one optical element proximate to a first end of at least one optoelectronic device in such a manner that an interstitial space is maintained between the first end of at least one optoelectronic device and the first end of at least one optical element.

33. A process according to claim 32, wherein the at least one optical element is included in an array of optical elements.

34. A process according to claim 32, wherein at least one optical element is an optical fiber.

35. A process according to claim 32, wherein at least one optical element is a MT-type connector.

36. A process according to claim 32, wherein at least one optical element is a ferrule.

37. A process according to claim 36, wherein at least one optical element is a MT-like ferrule

38. A process according to claim 32, wherein at least one optical element is a lenslet array.

39. A process according to claim 32, wherein at least one optical element is a diffractive optical element.

40. A process as in claim 32, wherein at least one optoelectronic device is a vertical cavity surface emitting laser.

41. A process as in claim 40, wherein the vertical cavity surface emitting laser is an oxide vertical cavity surface emitting laser.

42. A process as in claim 32, wherein at least one optoelectronic device is a photo-detector.

43. A process of aligning and connecting at least one optical fiber to at least one optoelectronic device to facilitate the coupling of light between at least one optical fiber and at least one optoelectronic device, comprising the steps of:

a) holding at least one optical element at the end of a first member of an alignment system, and holding at least one optoelectornic device on a second member of the alignment system;

b) locating the image of at least a portion of the optical element with an image alignment system;

c) locating the image of a target associated with at least one optoelectronic device with the image alignment system; and

d) using the image alignment system, changing the relative positions of at least a portion of the optical element and the target so that the image of at least a portion of the optical element is brought to a known position relative to the image of the target.

44. A process according to claim 43, wherein the image alignment system is a split-field microscope.

45. A process according to claim 43, wherein locating the image at least a portion of the optical element comprises using human vision.

46. A process according to claim 43, wherein locating the image at least a portion of the optical element comprises using machine vision.

47. A process according to claim 43, wherein locating the image of the target comprises using human vision.

48. A process according to claim 43, wherein locating the image of the target comprises using machine vision.

49. A process according to claim 43, wherein locating the image of at least one fiber optic core comprises illuminating at least one optical element with light so that the light illuminates at least one fiber optic core, the image of such core appearing as a spot under a split-field microscope.

50. A process according to claim 43, wherein the image of the target comprises an image of an emitting or detecting aperture of at least one optoelectronic device.

51. A process according to claim 43, wherein the at least one optical element is included in an array of optical elements.

52. A process according to claim 43, wherein at least one optical element is an optical fiber.

53. A process according to claim 43, wherein at least one optical element is a MT-type connector.

54. A process according to claim 43, wherein at least one optical element is a ferrule.

55. A process according to claim 54, wherein at least one optical element is a MT-like ferrule

56. A process according to claim 43, wherein at least one optical element is a lenslet array.

57. A process according to claim 43, wherein at least one optical element is a diffractive optical element.

58. A process as in claim 43, wherein at least one optoelectronic device is a vertical cavity surface emitting laser.

59. A process as in claim 58, wherein the vertical cavity surface emitting laser is an oxide vertical cavity surface emitting laser.

60. A process as in claim 43, wherein at least one optoelectronic device is a photo-detector.

61. A process of aligning and connecting at least one optical fiber to at least one optoelectronic device to facilitate the coupling of light between at least one optical fiber and at least one optoelectronic device, comprising the steps of:

a) holding at least one optical element at the end of a first member of an alignment system, and holding at least one optoelectornic device on a second member of the alignment system;

b) locating the image of at least a portion of the optical element with an image alignment system;

c) locating the image of a target associated with at least one optoelectronic device with the image alignment system;

d) using the image alignment system, changing the relative positions of at least a portion of the optical element and the target so that the image of at least a portion of the optical element is brought to a known position relative to the image of the target; and

e) fixating the first end of at least one optical fiber proximate to a first end of at least one optoelectronic device in such a manner that a gap exists between the first end of at least one optoelectronic device and the first end of at least one optical fiber.

62. A process according to claim 61, wherein the image alignment system is a split-field microscope.

63. A process according to claim 61, wherein locating the image of at least one fiber optic core comprises using human or machine vision.

64. A process according to claim 61, wherein locating the image of the target comprises using human.

65. A process according to claim 61, wherein locating the image of the target comprises using machine vision.

66. A process according to claim 61, wherein locating the image of at least one fiber optic core comprises illuminating at least one optical element with light so that the light illuminates at least a portion of the optical element, the image of such portion appearing as a spot under a split-field microscope.

67. A process according to claim 61, wherein the image of the target comprises an image of an emitting or detecting aperture of at least one optoelectronic device.

68. A process according to claim 61, wherein a side-view camera and a video-image-measuring system are used to bring the first end of at least one optical fiber proximate to a known position relative to the first end of at least one optoelectronic device.

69. A process according to claim 61, wherein laser triangulation is used to bring the first end of at least one optical element proximate to the first end of at least one optoelectronic device.

70. A process according to claim 61, wherein interference microscopy is used to bring the first end of at least one optical elementr proximate to the first end of at least one optoelectronic device.

71. A process according to claim 61, wherein a touch sensor is used to bring the first end of at least one optical element proximate to the first end of at least one optoelectronic device.

72. A process according to claim 61, wherein the first member of an alignment system is a high precision arm.

73. A process according to claim 61, wherein the second member of an alignment system is a high precision stage.

74. A process according to claim 61, wherein the at least one optical element is included in an array of optical elements.

75. A process according to claim 61, wherein at least one optical element is an optical fiber.

76. A process according to claim 61, wherein at least one optical element is a MT-type connector.

77. A process according to claim 61, wherein at least one optical element is a ferrule.

78. A process according to claim 77, wherein at least one optical element is a MT-like ferrule

79. A process according to claim 61, wherein at least one optical element is a lenslet array.

80. A process according to claim 61, wherein at least one optical element is a diffractive optical element.

81. A process as in claim 61, wherein at least one optoelectronic device is a vertical cavity surface emitting laser.

82. A process as in claim 81, wherein the vertical cavity surface emitting laser is an oxide vertical cavity surface emitting laser.

83. A process as in claim 61, wherein at least one optoelectronic device is a photo-detector.

84. A process of aligning and connecting at least one optical fiber to at least one optoelectronic device to facilitate the coupling of light between at least one optical fiber and at least one optoelectronic device, comprising the steps of:

a) holding at least one optical element at the end of a first member of an alignment system, and holding at least one optoelectronic device on a second member of the alignment system;

b) visually locating a target associated with at least one optoelectronic device;

c) illuminating at least one optical element with a light so that at least one optical element emits optical energy onto at least one optoelectronic device; and

d) changing the relative positions of the optical energy and the target so that the optical energy is visually aligned with the target.

85. A process according to claim 84, wherein visually locating a target comprises employing human vision and a microscope.

86. A process according to claim 84, wherein visually locating a target comprises employing machine vision.

87. A process according to claim 84, wherein visually aligning the optical energy with the target comprises employing human vision and a microscope.

88. A process according to claim 84, wherein visually aligning the optical energy with the target comprises employing machine vision.

89. A process according to claim 84, wherein the target comprises an emitting or detecting aperture of at least one optoelectronic device.

90. A process according to claim 84, wherein at least one optoelectronic device is an array of optoelectronic devices.

91. An process as in claim 84, wherein the optoelectronic device is a vertical cavity surface emitting laser.

92. An process as in claim 84, wherein the optoelectronic devices is an oxide vertical cavity surface emitting laser.

93. An process as in claim 84, wherein the optoelectronic device is a photo-detector.

94. A process according to claim 84, wherein the first member of the alignment system is a high precision arm.

95. A process according to claim 84, wherein the second member of the alignment system is a high precision stage.

96. A process according to claim 84, wherein at least one optical element is an array of optical fibers.

97. A process according to claim 84, wherein the optical element is an optical fiber.

98. A process according to claim 84, wherein the optical element is a MT type connector.

99. A process according to claim 84, wherein the optical element is a ferrule.

100. A process according to claim 84, wherein the optical element is a MT-like ferrule

101. A process according to claim 84, wherein the optical element is a lenslet array.

102. A process according to claim 84, wherein the optical element is a diffractive optical element.

103. A process of aligning and connecting at least one optical fiber to at least one optoelectronic device to facilitate the coupling of light between at least one optical fiber and at least one optoelectronic device, comprising the steps of:

a) holding at least one optical element at the end of a first member of an alignment system, and holding at least one optoelectronic device on a second member of the alignment system;

b) visually locating a target associated with at least one optoelectronic device;

c) illuminating at least one optical element with a light so that at least one optical element emits optical energy onto at least one optoelectronic device;

d) changing the relative positions of the optical energy and target so that the optical energy is visually aligned with the target; and

e) bringing the first end of at least one optical element proximate to a first end of at least one optoelectronic device in such a manner that a gap exists between the first end of at least one optoelectronic device and the first end of at least one optical element.

104. A process according to claim 103, wherein visually locating a target comprises employing human vision and a microscope.

105. A process according to claim 103, wherein visually locating a target comprises employing machine vision.

106. A process according to claim 103, wherein visually aligning the optical energy with the target comprises employing human vision and a microscope.

107. A process according to claim 103, wherein visually aligning the optical energy with the target comprises employing machine vision.

108. A process according to claim 103, wherein at least one optoelectronic device is an array of optoelectronic devices.

109. An process as in claim 103, wherein the optoelectronic device is a vertical cavity surface emitting laser.

110. An process as in claim 103, wherein the vertical cavity surface emitting laser is an oxide vertical cavity surface emitting laser.

111. An process as in claim 103, wherein the optoelectronic device is a photo-detector.

112. A process according to claim 103, wherein a side-view camera and a video-image-measuring system are used to bring the first end of at least one optical element proximate to the first end of at least one optoelectronic device.

113. A process according to claim 103, wherein laser triangulation is used to bring the first end of at least one optical element proximate to the first end of at least one optoelectronic device.

114. A process according to claim 103, wherein interference microscopy is used to bring the first end of at least one optical element proximate to the first end of at least one optoelectronic device.

115. A process according to claim 103, wherein a touch sensor is used to bring the first end of at least one optical element proximate to the first end of at least one optoelectronic device.

116. A process according to claim 103, wherein the first member of an alignment system is a high precision arm.

117. A process according to claim 103, wherein the second member of an alignment system is a high precision stage.

118. A process according to claim 103, wherein at least one optical element is an array of optical fibers.

119. A process according to claim 103, wherein the optical element is an optical fiber.

120. A process according to claim 103, wherein the optical element is a MT type connector.

121. A process according to claim 103, wherein the optical element is a ferrule.

122. A process according to claim 103, wherein the optical element is a MT-like ferrule

123. A process according to claim 103, wherein the optical element is a lenslet array.

124. A process according to claim 103, wherein the optical element is a diffractive optical element.

125. A process of aligning and connecting at least one optical fiber to at least one optoelectronic device to facilitate the coupling of light between at least one optical fiber and at least one optoelectronic device, comprising the steps of:

a) holding at least one optical element at the end of a first member of a precision placement system, and holding at least one optoelectronic device on a second member of the precision placement system;

b) determining the initial position of at least one optical element and at least one optoelectronic device;

c) positioning at least one optical element and at least one optoelectronic device and calculating the distance of at least one optical element relative to the distance of at least one optoelectronic device;

d) repeating the above-stated step until at least one optical element is substantially optically aligned with at least one optoelectronic device.

126. A process as in claim 125, wherein determining the initial position of at least one optical element and at least one optoelectronic device comprises the steps of:

a) holding at least one optical element and at least one optoelectronic device within a field of view of a microscope, where a position in the microscope's field of view is a known position in space; and

b) calculating the position of at least one optical element and at least one optoelectronic device relative to the position in the microscope's field of view.

127. A process as in claim 125, wherein determining the initial position of at least one optical element and at least one optoelectronic device comprises the steps of:

a) positioning at least one optical element and at least one optoelectronic device at a reference point, where the position of the reference point is at a known position in space; and

b) calculating the position of at least one optical element and at least one optoelectronic device relative to the position of the reference point.

128. A process as in claim 125, wherein the optoelectronic device is a vertical cavity surface emitting laser.

129. A process as in claim 125, wherein the optoelectronic devices is an oxide vertical cavity surface emitting laser.

130. A process as in claim 125, wherein the optoelectronic device is a photo-detector.

131. A process according to claim 125, wherein the optical element is an optical fiber.

132. A process according to claim 125, wherein the optical element is a MT type connector.

133. A process according to claim 113, wherein the optical element is a ferrule.

134. A process according to claim 133, wherein the optical element is a MT-like ferrule

135. A process according to claim 125, wherein the optical element is a lenslet array.

136. A process according to claim 125, wherein the optical element is a diffractive optical element.